

IOWA DEPARTMENT OF NATURAL RESOURCES
Flood Plain Management Procedural Guide
for
Channel Changes

INTRODUCTION

This procedural guide has been prepared to assist landowners in obtaining the necessary state and federal permits for changing the channel of an Iowa stream. The Iowa Department of Natural Resources and the U.S. Army Corps of Engineers are the state and federal agencies charged with regulating channel changes in Iowa. Depending on the stream and the scope of the proposed channel change, as many as three permits may be needed from these two agencies.

This procedural guide discusses what permits may be needed, the application process, and the criteria that must be considered in the review of a channel change project before a permit can be issued. In brief, the application process involves:

- Planning the channel change and preparing a plan showing the proposed work. Keeping the approval criteria discussed in this guide in mind when planning a channel change will improve the chances of a permit being issued.
- Filling out an application and submitting it, with the plans for the channel change, to the Department of Natural Resources (two copies) and the Corps of Engineers.
- Waiting for a response from the Department and the Corps as to what permits are required, any additional information needed, modifications needed before the project can be approved, etc.

WHEN PERMITS ARE NEEDED

Any channel change on any stream in the state (as well as border streams) may need permits from the Department of Natural Resources and the Corps of Engineers. "Channel change" as used in this procedural guide means any artificial change in the location of a stream channel or the size, slope, or flow characteristics of a stream channel. This includes all stream straightening projects and can include stream dredging. The word "stream" as used in this guide means any watercourse with definable bed and banks and includes rivers, creeks, brooks, etc. A watercourse does not have to have continuous flow to be considered a stream.

Any alteration of a stream channel, including channel straightening and dredging, could require a permit from the Department of Natural Resources and the U.S. Army Corps of Engineers. Always check if a permit is needed well before doing channel work.

Initiating a channel change without the necessary permits can be a risky proposition as both the Department and the Corps of Engineers have specific enforcement authority that ultimately could lead to financial penalties and the restoration of work already completed. Therefore, it is advisable to check if a permit is needed well before doing any channel work.

The permits that may be needed for a channel change on an Iowa stream are described below:

- ***Flood Plain Development Permit, Iowa Department of Natural Resources*** – In general, any channel change on a stream draining more than 10 square miles (at the location of the project) in rural areas or two square miles in urban (incorporated) areas will need a Department Flood Plain Development Permit. The exception to this is that any channel change on a "protected" stream will need a permit, regardless of the drainage area. Protected streams are specifically identified in 567 Iowa Administrative Code 72.50(455B).
- ***Section 404 Permit, U.S. Army Corps of Engineers*** – Section 404 refers to Section 404 of the federal Clean Water Act which requires a permit for the discharge of dredged or fill materials into the nation's waters. Potentially, all channel changes on all streams, regardless of the size of the stream, are subject to Section 404 permit requirements. Although Section 404 permits are issued by the Corps, the Department of Natural Resources must certify that a proposed project will not violate state water quality standards before the Corps can issue an individual Section 404 permit for a channel change. This certification process is required by Section 401 of the Clean Water Act.
- ***Sovereign Lands Construction Permit, Iowa Department of Natural Resources*** – The bed and banks of certain reaches of some of the larger streams in Iowa (legally referred to as meandered streams), as well as the border rivers, are owned by the state and not the riparian landowner. Channel work on these meandered streams is therefore considered work on state-owned property and a Sovereign Lands Construction Permit is needed.

WHY PERMITS ARE NEEDED

Society has long recognized that the nation's streams provide important public benefits in the form of transportation, water supply, waste assimilation, recreation, and fish and wildlife habitat. It has also long been recognized that the actions of riparian landowners can affect those public benefits and thus, the federal and state governments have often regulated those activities that can degrade streams and affect those public benefits.

Poorly planned and constructed channel changes often result in increased erosion, increased flooding on other lands, and destruction of fish and wildlife habitat. Studies have consistently shown that straightened channels have very low fish populations as compared to natural, unstraightened channels.

Channel changes can have detrimental effects on streams. Increased erosion, bed degradation (a lowering of the bottom of the stream), and increased upstream or downstream flooding are some of the problems that can be caused by improperly designed and constructed channel changes. These effects can occur on downstream and upstream properties not owned by the person doing the channel change. Channel changes also destroy fish and wildlife habitat, eliminating an already scarce resource. Surveys and studies have repeatedly found that channelized streams have very low fish populations and species diversity as compared with natural, unchannelized streams.

The permit process allows agencies to determine the potential impacts of a channel change project before construction occurs. A proposed channel change must meet various criteria concerning channel size and alignment as well as fish and wildlife habitat impacts before the necessary permit or permits can be issued. These criteria are designed to protect the public interest in a valuable natural resource (the state's network of natural streams) while at the same time allowing most landowners a reasonable degree of channel modification.

GETTING THE PROCESS STARTED

The first step is, of course, deciding what channel work you want to do. This first step should be guided by economics, (whether the assumed benefits justify the costs) and by whether the project can conceivably be approved if one or more permits are required. We also suggest checking with upstream and downstream landowners to determine if they might be opposed to the planned work and with the local office of the Farm Service Agency. Changing the channel of a stream could jeopardize participation in federal crop programs. Because of the various approvals that might be needed and the time needed to process permits, planning a channel change should be done well before the anticipated construction date.

Public financial assistance is generally not available for channel change work and, therefore, the construction cost of a channel change is primarily a landowner concern but is one factor that should be considered carefully. The construction cost of a channel change may be far greater than the financial benefits that will be realized. If bank erosion is a problem, bank protection may be a more economical solution. Maintaining a belt of natural vegetation along a stream may also retard bank erosion as well as provide wildlife benefits.

Keeping approval criteria in mind when planning a channel change will improve the chances a channel change will be approved and at the same time result in a better overall project design.

The Department and the Corps must consider various criteria when reviewing an application for a channel change permit. These criteria address impacts on fish and wildlife habitat, channel dimensions and alignment, flow characteristics, spoil disposition, soil erosion, and minimum offsets from confinement feeding operation structures and should be kept in mind when planning a channel change. Some of these criteria are discussed in greater detail below.

- ***Percent reduction in channel length*** – Channel straightening usually results in a shortening of the channel. The Department's rules restrict the maximum cumulative percent reduction in length allowed to the following amounts:

10% – Streams draining over 100 square miles at the project site.

25% – Streams draining 10 to 100 square miles in rural areas or 2 to 100 square miles in urban areas (at the project site).

0% – Protected streams [channel changes are not normally allowed – see the list of protected streams in 567 Iowa Administrative Code 72.50(455B)].

The percent reduction measurement is based on the total length of the channel through the applicant's property before the channel change. For instance, if the natural channel of a stream draining 50 square miles at the site of a proposed channel change measured 1000 feet in length from the upstream to downstream limits of an applicant's property, the overall length could be reduced by a maximum of 250 feet, assuming other relevant approval criteria could be met. There is not a specific percent reduction criterion for streams draining less than 10 square miles in rural areas or two square miles in urban areas, but the 25% would be a good guideline nonetheless.

Variances to the above percent reduction criteria are only allowed for very specific circumstances.

- ***Channel size and shape*** – Proposed channels must have approximately the same capacity as the natural channel and therefore should be approximately the same size as the natural channel. Pilot channels or oversized channels are not normally allowed. The side slopes of a channel should be designed to be stable. This is usually accomplished by sloping the banks back and protecting the banks with erosion resistant vegetation or riprap if necessary.
- ***Channel alignment*** – The upstream and downstream transition between a new channel and the natural channel should be smooth with no sudden changes in direction or size. An abrupt change in the direction of flow or the size of the channel will often result in excessive erosion.
- ***Fish and wildlife habitat*** – A channel change cannot have a significant adverse impact on fish and wildlife habitat or other public benefits. Normally, fish and wildlife biologists with the Department of Natural Resources assess such potential impacts and will conduct a site evaluation upon receipt of an application for a permit.
- ***Encroachment on a confinement feeding operation structure*** – A channel change can not be constructed within the following distances from a confinement feeding operation structure unless a secondary containment barrier is in place

500 feet – All watercourses that are not classified as a major water source.

1000 feet – All streams that are classified as a major water source in 567 Iowa Administrative Code Chapter 65.

Planning a channel change with the above considerations in mind will not assure approval but the likelihood of having an "approvable" channel change project will undoubtedly be better than planning a channel change with only the maximum economic benefits in mind.

REQUESTING A PERMIT

An application for approval to construct a channel change should be submitted to the Department of Natural Resources and the Corps of Engineers after the general layout and scope of a proposed channel change has been decided. To simplify the application procedure, a single, multiple-copy application form, DNR Form 36, *Joint Application Form – Protecting Iowa Waters* (the last section of this guide contains several useful reference or resource items in the form of both text and web links, such as links to the application and to a channel change checklist), can be used to apply for both Department and Corps permits. The application form includes instructions for filling out the form as well as addresses and other relevant information. There is no application fee although the Corps may charge a permit issuance fee if an individual Section 404 permit is needed.

The initial submittal should include the completed application form and plans that clearly show the location and alignment of the proposed channel change as well as the existing and proposed channel width and depth. An aerial crop photo from your local Farm Service Agency works well for this. Copies of the application and plans should be sent to both the Department of Natural Resources and the Corps of Engineers.

As part of the application, plans must be submitted that show the scope, alignment, etc. of the proposed channel change. For channel changes that require a Flood Plain Development Permit from the Department of Natural Resources, certified engineering plans may be required. This can be a significant cost so we suggest that prior to obtaining the services of a registered Professional Engineer, the application form initially be submitted with a copy of a Farm Service Agency aerial crop photo showing the proposed channel alignment. Other information that should be shown on the aerial photo or an attached plan sheet includes the approximate depth and width of the existing and proposed channels, the disposition of spoil material, the upstream and downstream property limits, and any other relevant information. This initial submittal will enable the Department to determine if the project will meet two key approval criteria, percent length reduction and fish and wildlife habitat impacts, before engineering plans are prepared.

AGENCY ACTION

Upon receipt of the application and supporting information, the Department and the Corps will begin the review process. The initial step will be to determine which, if any, permits will be required. If either a Corps or a Department permit is required, the next step will likely be an on-site inspection by fish and wildlife biologists to determine the potential impacts on fish and wildlife habitat. Agency staff will also initiate a technical review (for instance, checking the percent reduction in channel length) and solicit comments from upstream and downstream landowners as well as any other interested parties.

Some proposals may be acceptable as initially submitted and the necessary permit or permits can be issued with no additional information or project modification being needed. In other cases, the applicant may be informed that more information is needed or that the project will have to be modified before approval can be granted. Some of the more common requests are included below.

- ***Submittal of engineering plans*** – If a Department Flood Plain Development Permit is needed, engineering plans certified by a Professional Engineer registered in the State of Iowa will be needed unless the change is relatively minor in scope. Engineering plans are needed to complete the review process and accurate engineering data is essential for this. Certified engineering plans could be prepared and be included with the initial submittal but by waiting until the fish and wildlife habitat assessment is conducted, the expense of preparing plans for an "unapprovable" project will be avoided.
- ***Mitigation*** – The fish and wildlife assessment may result in a recommendation that a project be approved subject to an applicant providing mitigation for lost fish and wildlife habitat. Typical mitigation measures might include establishing permanent wildlife habitat strips alongside the channel, planting trees and shrubs, or providing rock riffle structures for fish habitat in the new channel.
- ***Modification of channel change*** – If a proposal cannot be approved as initially submitted but modifications could be made that would make it acceptable, the applicant will be advised of the modifications needed.

If a proposal cannot be approved regardless of the mitigation or modifications the applicant is willing to provide, the applicant will be advised of that.

Channel change proposals must meet all relevant approval criteria before approval or appropriate permit or permits can be granted. Permits normally contain various conditions with which the permittee must comply. Some of these conditions may be general in nature (for instance, charging the permittee with proper maintenance) while others may be specific to the approved project (such as requiring the

establishment and perpetual maintenance of mitigation measures). The Department or the Corps may make post construction inspections to determine whether the work was done in accordance with the permit. In addition, a copy of the permit may be filed with the county recorder to give prospective purchasers of the involved land constructive notice of any mitigation requirements or other special conditions contained in the permit.

If an application for approval is denied, the denial can be appealed. The process for appealing will depend upon which agency denied the permit.

If a channel change project cannot be approved, the applicant will be given a chance to either withdraw the application or request formal action on the application as submitted. The denial of a permit can be appealed and the appeal process will depend upon whether the denial is either a Department or a Corps action. In addition, other parties that feel a channel change project will have an adverse impact can appeal the issuance of a permit. For Department Flood Plain Development and Sovereign Lands Construction Permits as well as Section 401 Water Quality Certification, an appeal must be made within 30 days of the approval or denial and the appeal will normally be heard by a state Administrative Law Judge.

OTHER RELEVANT INFORMATION

- For questions about the Department of Natural Resources permits and approvals, call or write the Department's Water Resources Section, Wallace State Office Building, 502 East 9th Street, Des Moines, IA 50319-0034 (515-281-8693, FAX 515-281-8895).
- For questions about the Corps of Engineers Section 404 permit process, call or write the Rock Island District of the Corps of Engineers, Clock Tower Building, P.O. Box 2004, Rock Island, IL 61204-2004 (309-794-5373) unless the channel work is on the Missouri River or the lower 1.7 miles of the Big Sioux River, in which case contact the Omaha District, 8901 South 154th Street, Omaha, NE 68138-3621 (402-896-0896).
- A booklet describing various methods of bank stabilization is available online at http://www.iowadnr.com/water/stormwater/forms/streambank_man.pdf.
- Sample engineering plans of a typical channel change are available from the Department of Natural Resources and can be provided upon request.
- The Department of Natural Resources can determine the drainage area of a stream if given the specific location (Section, Township, Range and County) and stream name (if known).
- The administrative rules pertaining to the Department of Natural Resources flood plain program are available online within <http://www.legis.state.ia.us/IAC.html> (Environmental Protection Commission [567]; 567 Iowa Administrative Code Chapters 70 through 75).
- Aerial photographs can be obtained online at <http://ortho.gis.iastate.edu/search.html>.
- The *Joint Application Form – Protecting Iowa Waters* can be obtained online within <http://www.iowadnr.gov/water/floodplain/index.html>.
- A Project Information Checklist for Channel Changes can be obtained online within <http://www.iowadnr.gov/water/floodplain/index.html>.